



# AOG COE Tiger Team Status Update



# COE Tiger Team



- COE Tiger Team established to accelerate the readiness of the COE 4.X software foundation to support full-scale system integration, certification, operational test, and eventual fielding
- Established Tiger Team goals where:
  - Close all pri-1/2 GSPRs
  - Full 3.X functional equivalency and all new functionality properly working
  - All stability, reliability, and performance issues addressed
- The results of the TT were provided in a Tiger Team KPP/Stoplight report and this brief takes extracts from the Executive Summary of the report and supporting graphs
  - The report basically addressed four questions:
    - What is the demonstrated maturity and stability of the 4.X COE foundational software?
    - 3.X-to-4.X functionality parity?
    - Is system performance satisfactory?
    - Can the system establish and operate in a secure environment?



# Stoplight Findings

**4.1 Y** **What is the demonstrated maturity and stability of the of foundational software?** With the exception of the COP Synch Tools (CST) segment, all components of the COE foundation have demonstrated a level of maturity and stability sufficient to support full-scale system integration. Maturity curves for pri-1's have become flat to minimal and those of pri-2's, while not flat, are sufficiently low to indicate that the software is approaching maturity (CST excluded). Results of the Endurance and Stress tests, have shown that the COE foundational software to be stable and while limited in scope, further indicates that system integration can be accomplished. Additionally, the foundation will benefit from system integration efforts by adding additional stress/loading which may bring out issues that can only be found under conditions beyond what the Tiger Team could bring to bare.

**4.1 G** **3.X-to-4.X functionality parity?** Based on analysis of 3.X-to-4.X requirements and submitted completed to date, believe the 4.X software to have no significant loss of capability/functionality from 3.X (note, Alerts and AA pending; pri-3 STRs). Additionally, the 4.X baseline provides a fully functional PC-client, increase track capacity and throughput, vastly improve security, and new foundational support items (XIS, XDBI, ground order of battle support infrastructure, ....), which will allow systems to implement improved mission applications.



## Stoplight Findings (2)

**Y**

**Is system performance satisfactory?** The vast majority of the operator interactions/functions are equivalent to that of the 3.X system with tracks loads of 10,000 or less tracks and with 15-20,000 tracks are slightly slower, but by no means to an extent that would be considered unacceptable. There are, however, two areas that are likely to be unacceptable to operational users, that dealing with system initialization (login to operational display) and various mapping/display issues (most significant are initialization and termination of a second chart). Beyond the operator interactions, the system performance in regards to track capacity, data throughput, and CPU utilization is superior to 3.X.

**G**

**Can the system establish and operate in a secure environment?** The security foundation for COE 4.X is fully implemented and has been validated to meet established SEWG defined security lockdown requirements. Furthermore, the COE foundational software has demonstrated that it meets the security requirements of the I&RTS and operates in the establish secure environment with degradation.



# Outstanding Issues - The Tiger Team Continues

- Three issues from Tiger Team had to be addressed in near term
  - JVM/garbage collection issue (excessive heap growth/memory leak)
  - System login/initialization issue (excessive time from login to useable display)
  - Second chart issue (time to bring-up second chart and having to close primary chart to delete second chart)
- Tiger Team was extended (Tiger Team Two) through end of June to address the above three issues, as well as the following:
  - Addressing any remaining/new Pri-1/2 STRs against the COE Foundation
    - Fully expect to find more issues as we proceed through the integration process
  - Complete detailed functional testing of CST and address all pri-1/2 STRs
  - Complete full regression testing on the Java 1.4 based equivalent to TT Drop 14 and provide same to DISA for inclusion in COE 4.6 release
  - Prioritize and address priority-3 STR/PRs along with SCP/CRs that are required by COE systems
  - Complete implementation of OAG user interface/usability issues
  - Further evaluate both APM and Security issues/requirements



## Outstanding Issues - Status

- JVM/garbage collection issue (excessive heap growth/memory leak)
  - NGIT, working with SUN JAVA engs, corrected several contributing issues, including a memory leak
  - Shifting to JAVA 1.4 corrected remaining problems seen on Solaris
  - Ran an endurance test for 300+ hours and had no garbage collection or heap growth/memory leak issues
- System login/initialization issue (excessive time from login to useable display)
  - Profiled the kernel, ICSF, CCE/CME, and XIS processes at login
  - Addressed issue in kernel that caused delay in launching of boot processes
  - ICSF made improvements in how Symplot passed data to JMV
  - Implemented default login filters
  - Beyond basic process launching, processing and plotting tracks simply takes more time in 4.X - approximately 100+tracks/sec (e.g., 10,000 tracks take 90 sec)
- Second chart issue (time to bring-up second chart and having to close primary chart to delete second chart)
  - Logic for keeping track of primary and secondary chart contents separately implemented; second chart now closes w/o impacting primary chart



## Outstanding Issues - Status (2)

- Addressing any remaining/new Pri-1/2 STRs against the COE Foundation
  - Continuing to identify occasional Pri-1's and limited Pri-2 STRs which are being addressed in eng drop/patches along w/ pri-3's/OAG items and leading to a 4.5P4 (date tbd)
  - Expect same to continue through the integration and test process
- Complete detailed functional testing of CST and address all pri-1/2 STRs
  - Completed one round of testing and expect 2<sup>nd</sup> round beginning next week
  - Expect 2<sup>nd</sup> round to address most of currently identified problems and to provide a CST which can support integration efforts, but "grooming" process will likely continue for several months
- Complete full regression testing on the Java 1.4 based equivalent to TT Drop 14 and provide same to DISA for inclusion in COE 4.6 release
  - Numerous "nuisance" issues identified in initial port to Java 1.4 (right pop-up, icons not fully embellished, menus greying, ....)
  - SUN JVM eng worked with NGIT to identify causes of problems
    - Some issues caused by "tighter" interpretation of Java specs (worked w/ 1.3 but not allowed w/ 1.4); some due issues w/ new JVM
    - NGIT addressed majority of issues and two problem reports on the 1.4 VM



## Outstanding Issues - Status (3)

- Prioritize and address priority-3 STR/PRs along with SCP/CRs that are required by COE systems
  - Inputs requested/received from services and prioritization matrix provided to DISA for approval
  - Matrix is being used to drive pri-3 implementation
- Complete implementation of OAG user interface/usability issues
  - 178 OAG reviewed and entered into CM d/b as SCPs
  - Being worked as on-going effort in parallel with STR fixes
  - Approx. 20 addressed in 4.5.0.3, another 20+ in 4.5P4beta1, ..., and some closed as invalid (~10-15)
- Further evaluate both APM and Security issues/requirements
  - This has been primarily at the program level
  - Need to ensure information is shared across programs/systems





## What's Next ?

- GCCS and GCCS-M programs start their system integration efforts at SSC SD beginning 2<sup>nd</sup> week of July
  - Each program will “control/manage” their own integration process
  - DISA and COE-M assets will work in parallel to this effort to address their issues, those of other programs, and to support integration and testing of common components as feasible
  - Role of “I&T Coordinator” established to identify areas where I&T can be done more efficiently/effectively
- All COE users/programs will benefit from the above efforts
  - Above efforts will provide the application loading necessary to complete grooming of the COE infrastructure
  - Issues/problems from other programs are included in the overall COE worklist
  - While the above efforts will drive initial prioritization/worklist, all STRs/SCPs will be transferred into GSPR d/b on a weekly basis and go through the PCRB process for concurrence/oversight – all programs invited to participate
  - Other programs wishing to participate in some degree of integration/test in this environment, can contact COE-M to potentially use those assets (may require some level of funding support)
  - I&T Status reports will be posted (interval tbd)